

Dairy Excel's

15

Measures of Dairy Farm Competitiveness



Bulletin 864

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Dairy Excel is a multifaceted management education program specifically designed to improve the competitiveness of the northeastern Ohio dairy industry.

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Introduction

We are pleased to share our 15 measures of dairy farm competitiveness. In our judgment, these measures represent key characteristics of the most competitive dairy producers in the midwest. Some dairy producers already exceed some of the measures. Dairy producers who meet most of the measures are competitive with dairy producers anywhere in the world and enjoy a high standard of living.

Many dairy producers do not meet many of the measures. These producers will likely be forced out of dairying within the next 20 years.

The 15 measures fall into 10 broad areas, which together provide a good view of the competitiveness of a dairy farm business. The 10 areas are:

- | | |
|---------------------------------|--|
| 1) Rate of production | 6) Cost control |
| 2) Capital efficiency | 7) Profitability |
| 3) Liquidity | 8) Repayment schedule |
| 4) Solvency | 9) Mission |
| 5) Motivated labor force | 10) Ability to maintain family's standard of living |

Major problems in any one area can seriously limit the ability of a dairy farm to compete. We selected one or two measures in each area to indicate how the farm was doing.

As a dairy producer, you should evaluate and analyze your farm from many viewpoints. Farms performing well in some areas may have serious weaknesses in others. Evaluating your farm from several different perspectives as you plan for the future ensures that your business is structured and managed for competitiveness and growth.

Following the complete listing of the 15 measures on pages 4 and 5 are spreads describing each measure in detail. These pages explain each measure, tell how to compute and interpret it, and discuss the desirable range. We also suggest changes to help a dairy operation move into the desirable range.

Many dairy producers do not have the desire or the resources to make the changes necessary to compete with the most competitive farms. Even when they have the desire, limited resources make some of these measures difficult for the average dairy producer to achieve. Producers who will not or cannot achieve the desired ranges may continue to operate and support a family for many years. However, primarily because of inflation, those who do not make changes to become competitive can expect a declining standard of living over time.

Competitiveness requires a commitment to constant improvement and change. Even these measures will change over time. Dairy producers who want to stay competitive must continue to improve, modernize, and change.

Being competitive is more than having the "right" technology. For example, a dairy farm family with better than average management must increase the number of dairy cows on their farm by approximately 60 percent every 10 years to maintain their standard of living. Most of that increase is required to offset inflation.

Dairy farm income per cow has gone up slightly during the last 35 years, but the declining value of the dollar (inflation) has dramatically reduced what you can buy from the income from one cow. Historically, a dairy farm manager has needed to increase cow numbers by 50 percent every 10 years just to offset the impact of inflation. However, because more cows mean higher incomes and more income tax, farmers must increase cow numbers at least another 10 percent to pay the additional tax on the higher income.

Each farm, farm manager, and farm family is different. At the end of this publication, we offer suggestions to dairy farm managers who: 1) already are competitive, 2) want to become competitive, 3) do not want to become competitive, and 4) would like to become competitive but cannot.

Gaining Control of Your Business

Business managers gain control of their businesses one step at a time. Thinking that you can quickly change or improve all 15 areas at once is unrealistic. Frequently, it takes many little changes and perhaps several larger moves over months and even years to make a major change in a business. However, most dairy farmers should compare their operation with all 15 of these measures at least once per year. Farmers who want to maintain their operations in the long run must stay competitive.

Following are four broad steps for gaining control of your business:

Step 1: Set a Goal

The first step in gaining control of any part of a business is to set a goal or target. In some cases, one or more of our 15 measures can serve as a target. In most cases, a manager will need to set a similar but different and more appropriate target for his or her specific business. Thinking you can quickly move to the level of the most competitive dairy farms in the country is unrealistic. However, setting goals higher than current performance and starting to improve your operation is realistic.

Step 2: Collect Information

The second step in gaining control of a part of your business is collecting information to see how your farm compares with other dairy farms. Many producers would benefit from using a computerized year-end analysis program such as the one used to compile the New York Dairy Farm Business Summary (NYFBS, see *Business Summary: New York State* in References). The FINAN program, one of the FINPACK programs, is used by Extension in Ohio and 30 other states to make such calculations. FINAN will calculate all of the financial ratios listed in the 15 measures except for feed cost per hundredweight (cwt). The records needed to complete FINAN are beginning-of-the-year and end-of-the-year balance sheets, performance information, and cash records. If you use FINAN for several years, you can see business trends over time.

Step 3: Monitor Your Progress

The third step in gaining control of a part of your business is monitoring your progress—that is, comparing how you are doing with your goals. You should make this comparison while the information is still timely. Finding out six months after the fact that the ration you were feeding six months ago caused a major drop in production is not very meaningful. However, you may need to calculate debt to asset ratio only once per year, if your operation does not undergo any major financial changes.

To see how monitoring works, consider the following example. Suppose the management team sets a goal of lowering their operating expense ratio (our measure 4) to no more than 70 percent. First, someone should measure income and expenses regularly (probably monthly) throughout the year. If either factor changes, they should take corrective action in time to keep the expense ratio in line. If the person collecting the information is not a manager, they should report the information to a designated member of management.

A key, yet often overlooked, management issue is who is responsible

for setting the goals (step 1), collecting the information (step 2), and comparing progress against the set goals (step 3). Frequently different people will set goals, collect information, and monitor different parts of the business. The important question is, does someone have responsibility for performing each of these steps on key goals? How often is this person to do it? With whom are they to share the information? What is this person to do if they find a major problem? Management must ensure that someone is responsible and follows through!

Step 4: Take Corrective Action

The fourth and most important step is taking the appropriate corrective action, if needed. If the business is meeting a goal, no action is required unless the goal is too low. If the business is exceeding a goal, action may still be necessary. If the goal is exceeded because of desirable behavior by one or more people in the business, management may want to praise and reward those who helped exceed the goal. Management also may want to consider whether the goal is too low, but they must be careful not to discourage high performers by raising the goal and “rewarding” high performance with even higher expectations.

If the goal is not met, management should do one of two things:

- 1) consider if the goal is too high and needs to be re-evaluated or
- 2) take corrective action based on why the goal was not met. Taking corrective action includes identifying problems and implementing the necessary steps to remedy the situation. Managers who make things happen are able to identify the cause of a problem, then solve it. They usually ask “Why?” until they fully understand a problem. They then entrust someone to solve the problem.

The 15 Measures

Measure

Competitive level

Rate of production

1) Pounds of milk sold per worker (p. 6)	<i>Tie stall or stanchion</i>	<i>Free stall-parlor</i>
<i>Large breed</i>	≥ 600,000	≥ 1,000,000
<i>Small breed</i>	≥ 450,000	≥ 750,000

Cost control

2) Total feed cost per cwt. of milk sold (p. 8)	≤ \$6.00 per cwt.
3) Milking herd feed cost per cwt. of milk sold (p. 10)	≤ \$4.00 per cwt.
4) Operating expense ratio (p. 12)	≤ 70 percent

Capital efficiency

5) Dairy investment per cow (p. 14)	≤ \$6,000 per cow
6) Asset turnover ratio (ATR) (p. 16)	≥ 0.50

Profitability

7) Net farm income (NFI) (p. 18)	≥ \$75,000 per owner/ operator family
8) Rate of return on farm assets (ROA) (p. 20)	≥ 11 percent

Liquidity

9) Current ratio (p. 22)	≥ 1.3
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Repayment schedule

- 10) Scheduled debt payment (principal, interest, and capital lease) (p. 24)** **≤ 20 percent of gross receipts**

Solvency

- 11) Debt to asset ratio (D/A) (p. 26)** **≤ 40 percent**
- 12) Debt per cow (p. 28)** **≤ \$2,000 if not expanding**
≤ \$3,000 if expanding

Mission

- 13) The management team agrees on why they are in business (p. 30)** **Written mission statement**

Maintain family's standard of living

- 14) Owner/operator(s) maintain or increase their standard of living by continual change to adopt proven technology, capture economies of size so that family(s) supported by the business can maintain their standards of living (p. 32)** **Expand herd 60 percent every 10 years**

Motivated labor force

- 15) Managers use personnel management practices that lead to well-trained, enthusiastic, empowered family members and employees who share a commitment to the mission and goals of the business (p.34)**

Measure 1: Rate of Production

As measured by:

Pounds of milk sold per worker

Competitive level:

	Tie stall or stanchion	Free stall-parlor
Large breed	≥ 600,000	≥ 1,000,000
Small breed	≥ 450,000	≥ 750,000

Calculation:

**Total pounds (lb.)
of milk sold
÷ full time worker
equivalents (FTEs)**

Example:

**4,000,000 lb. milk sold
÷ 4.33 (13,000 hr. ÷ 3,000 hr./FTE)
= 923,084 lb. milk sold per worker**

Pounds of milk sold per worker combines labor efficiency and dairy herd productivity into a single indicator.

- 1) Calculate total FTEs on the farm per year. Divide total hours of labor for dairy feed crops and the dairy enterprise by 3,000.
- 2) Divide total pounds of milk sold by total FTEs per year.

Pounds of milk sold per worker is an important tool for evaluating the productivity of workers and cattle. It combines efficient labor utilization with good to excellent herd production. *If all feed is purchased, double these benchmarks.*

Because they can handle more cows, free stall-parlor systems allow workers to produce more pounds of milk per year than tie stall or stanchion systems. We do not recommend that dairy farmers build tie stall or stanchion barns today because these facilities entail considerably higher costs per cow than large, modern free stall-parlor facilities. The combination of lower investment per cow and more efficient labor utilization make free stall-parlor systems much easier to pay for, because they generally result in lower costs for producing each unit of milk. However, existing tie stall or stanchion facilities may be able to compete with free stall-parlor systems if the operation carries little or no debt.

Workers in small breed herds will produce fewer pounds sold per year, but may produce a similar value of milk sold per year when in

similar management systems. However, because the value of milk sold is affected by milk price fluctuations, it is not as useful for measuring labor productivity trends over time.

If pounds of milk sold per worker is below the competitive level:

- 1)** Evaluate herd productivity. To achieve the desired level of pounds of milk sold per worker, cows probably need to be above average for the breed in production per cow. Many competitive farmers use BST on eligible cows, overcrowd their facilities, and milk more than two times per day to get more milk per worker.
- 2)** Evaluate labor efficiency. Antiquated facilities and uncomfortable working conditions reduce labor efficiency. Careful hiring plays an important role in labor efficiency. Employee training, motivation, and pride in doing a job well all help workers to be more efficient and effective, whether they are family members or unrelated employees. Workers in tie stall or stanchion systems should be able to handle 30–35 cows per FTE, including raising crops. Workers in free stall-parlor systems should be able to handle 40–50 cows per worker.
- 3)** Apply the four steps in the Gaining Control of Your Business section in the Introduction (p. 2). Set a realistic goal or target, collect information for your own business, compare your business with the goal or target, and take appropriate corrective action, if needed.

References:

Business Summary: New York State, Cornell University, 1995, table 41, page 36, average pounds of milk sold per worker = 736,269, top 10 percent = 970,787.

Profitability of Dairy Farms, Dave Galton, Cornell University, table 8, page 11.

Measure 2: Cost Control

As measured by:

Total feed costs per hundredweight (cwt.) of milk sold

Competitive level:

Less than \$6.00 per cwt. of milk sold

Calculation:

**Total cost of all feeds fed
to all dairy cows and
replacement heifers
÷ total cwt. of milk sold
(for the same period)**

Example:

**\$300,000 purchased feed
+ 270,000 homegrown feed
= \$570,000 total feed
÷ 90,000 cwt. (lb. ÷ 100) of milk
= \$6.33 feed cost per cwt. milk sold**

Total feed costs per cwt. of milk sold measures the effectiveness of management in controlling the largest cost items in producing milk. We suggest using the “market” value for homegrown feeds fed to livestock. Using the market value will give you a clearer picture of the competitiveness of your dairy enterprise.

Many dairy farmers can purchase feed more cheaply than they can raise it. In Appendix A, we discuss how to calculate the cost of producing your feed. Comparing feed production costs with market prices will help you evaluate the efficiency of your cropping program.

The NYFBS uses cost of cash crop inputs to represent homegrown feed costs, but does not include machinery costs. For this analysis, calculate all machinery costs and allocate a portion to the crops used as dairy feed.

Reducing cash outlay for purchased feed is not necessarily a good way to reduce feed costs. Homegrown feed is often more “expensive” than purchased feed. If purchased feed costs per cow are kept too low, milk production will be less than optimal and total feed cost per cwt. of milk sold may still be high.

When you use market price or purchase most of your feed, feed costs will fluctuate with market prices. The following table shows how feed costs vary with different corn and hay prices. Use this table to help set a more realistic feed cost goal when feed prices are unusually high or low and a goal of \$6.00 per cwt. of milk sold is not appropriate.

Feed cost per cwt.			
Corn price per bushel	Hay price per ton		
	\$70	\$100	\$130
\$2.00	4.98	5.76	6.53
\$2.50	5.40	6.18	6.95
\$3.00	5.80	6.60	7.37
\$3.50	6.23	7.01	7.75

We calculated these feed costs using numbers in the *Ohio Dairy Enterprise Budgets, 1996*, Ohio State University Extension. They are for a large breed dairy cow producing 21,000 pounds of milk. Appendix B, Table A, shows feeds and quantities fed.

If feed cost is above \$6.00 per cwt. of milk sold:

If you have followed the principles in the Gaining Control of Your Business section in the Introduction and find you are not meeting your feed cost goals, consider these actions:

- 1) Produce or purchase high-quality forages for all cattle. You cannot afford to feed poor-quality forages.
- 2) Frequently balance rations for all groups based on current feed analyses.
- 3) Keep crop production input costs low by using manure nutrients, testing soil, and purchasing carefully.
- 4) Keep purchased feed costs low by careful purchasing and efficient use of feed.
- 5) Keep crop equipment costs per acre low by using custom operators, purchasing expensive machinery with neighbors, or purchasing feeds.
- 6) Feed for high production if cows have the genetic ability and you have adequate facilities.
- 7) Keep dry periods below 60 days.
- 8) Keep culling rates at 25 percent or less by managing reproduction and herd health to reduce replacement costs.
- 9) Keep age at first calving below 24 months to reduce costs per replacement animal.
- 10) Consider whether you should use BST.

Farms can simultaneously have low feed costs per cow and extremely high feed costs per cwt. of milk sold. This results from low-production methods, such as feeding poor-quality forage and not balancing the ration for optimal production.

Reference:

Ohio Dairy Enterprise Budgets, 1996, Ohio State University Extension, page 13.

Measure 3: Cost Control

As measured by:

**Milking herd feed costs per hundredweight
(cwt.) of milk sold**

Competitive level:

Less than \$4.00 per cwt.

Calculation:

**(Total quantity of
each feed fed
x market price per unit)
÷ total cwt. of milk sold
for the day**

Example:

**\$200,000 purchased feed
+ 180,000 homegrown feed
= \$380,000 total feed cost
÷ 90,000 cwt. (lb. ÷ 100) of milk
= \$4.22 milking herd feed
costs per cwt. milk sold**

To quickly evaluate feed cost control or to find out if more detailed analysis of feed costs is necessary, calculate the total feed cost per cwt. of milk produced using current market prices for all feeds fed.

- 1) For a day, measure the quantities of each feed (including purchased and homegrown) fed to lactating cows.
- 2) Multiply the feed quantities by current market prices to arrive at the cost of feed per day.
- 3) Divide cost of all feed fed by the cwts. of milk sold for the day.

Factors affecting feed costs per cwt:

- 1) level of milk production
- 2) current market prices of feeds
- 3) quality of forages fed and the effect on purchased feed inputs
- 4) whether or not the ration is balanced

- 5) cull percentage
- 6) length of dry cow period
- 7) length of calving interval

If feed costs are above the desired level:

If you are not meeting your feed cost goals, consider these actions:

- 1) Check forage quality and improve it if necessary.
- 2) Make sure the ration is balanced and cows are eating what you think they are eating.
- 3) Make sure the ration is balanced for a “reasonable” level of production.
- 4) Check the cost of ingredients and make changes to cut costs without cutting milk production.
- 5) Eliminate causes of low production, such as poor cow comfort, mastitis, and poor feed bunk management.

Feed costs fluctuate with the market price of the feeds. The following table shows how milking herd feed costs vary with different corn and hay prices. Use this table to help set a more realistic feed cost goal when feed prices are unusually high or low and a goal of \$4.00 per cwt. of milk sold is not appropriate.

Milking herd feed cost per cwt.			
Corn price per bushel	Hay price per ton		
	\$70	\$100	\$130
\$2.00	3.20	3.53	3.89
\$2.50	3.51	3.85	4.23
\$3.00	3.83	4.17	4.55
\$3.50	4.15	4.49	4.89

This table is for a balanced ration for a milking cow producing 70 pounds of milk per day. Appendix B, Table B, shows the individual feed ingredients in the ration.

Reference:

Ohio Dairy Enterprise Budgets, 1996, Ohio State University Extension, page 13.

Measure 4: Cost Control

As measured by:

Operating expense ratio

Competitive level:

Less than 70 percent

Calculation:

**(Total cash operating
expenses
- farm interest expense)
÷ gross farm income
x 100**

Example:

**\$700,000 cash operating expenses
- 100,000 interest
= \$600,000 total operating expenses
÷ 900,000 gross farm income
= 0.67
x 100
= 67% operating expense ratio**

This ratio indicates the percent of the gross farm income used to pay operating expenses. Expenses other than interest should be less than 70 percent of the gross farm income of a dairy business. The lower the percentage, the more money available for loan payments, family living, improvements, and savings.

Gross farm income includes cash farm income adjusted for changes in inventories from year to year. If, as a dairy farmer, you have the same number of livestock in one year as the previous year, except for 5 additional springing heifers worth \$5,000, add this \$5,000 to gross farm income. If you have \$3,000 less feed on hand than in the previous year, reduce gross farm income by \$3,000.

Take cash operating expenses directly from Form 1040, Schedule F for the year (excluding depreciation), but adjust them for year-end purchases that you will use in a different tax year than the year in which you purchased them. Farm interest expense includes all interest expenses included in operating expenses.

If operating expense ratio is lower than 70 percent:

Low expenses are desirable only if production and income do not suffer. If expenses are below 70 percent and production per cow is above that for similar animals, then great! If expenses are low, income is low, and cash flow is tight, the business may not be large enough to generate

sufficient income or debt may be high. Look first at other ratios that measure output and volume of business. The business also might have too much debt, since principal and interest payments are not included in operating expenses. Check the current ratio and the debt to asset ratio for clues about excessive debt.

If operating expense ratio is higher than 70 percent:

An operating expense ratio above 70 percent may reflect high expenses, low income, or both. The largest single expense on most dairy farms is purchased feed. Make sure that purchased feed cost per cwt. of milk sold is reasonable. Are other expenses out of line or reported in the wrong year? Another reason for operating expense ratio to exceed 70 percent is low gross farm income. Look at the asset turnover ratio, milk sold per worker, and perhaps the farm investment per cow for clues as to whether gross farm income is too low or the farm is too small.

References:

Business Summary: New York State, Cornell University, 1995, table 17, page 15, average = 0.74, top 10 percent = 0.69.

Recommendations of the Farm Financial Standards Council: Financial Guidelines for Agricultural Producers, July 1995.

Measure 5: Capital Efficiency

As measured by:

Dairy investment per cow

Competitive level:

Less than \$6,000 per cow

Calculation:

$$\frac{\text{Total dairy investment}}{\text{number of mature cows}}$$

Example:

$$\begin{aligned} & \frac{\$1,500,000 \text{ total dairy investment}}{240 \text{ mature cows}} \\ &= \$6,250 \text{ dairy investment per cow} \end{aligned}$$

Total dairy investment is the total current market value of all dairy assets.

This ratio indicates how efficiently the money on a dairy farm is invested. Excessive investment per cow makes receiving a high return on the dollars invested difficult. In other words, your dollars are not working hard enough to generate dairy income.

If dairy investment is more than \$6,000 per cow:

The first question to answer is: What is out of line? Is the investment too high, the number of cows too low, or both?

High investment per cow may stem from a number of causes including:

- 1) high-priced land
- 2) overbuilt facilities
- 3) a large number of owned acres per cow
- 4) new or overpriced machinery
- 5) new or overpriced facilities
- 6) some combination of the above

Note: Farmers should compute this measure using only dairy investment. Only include land used for raising livestock feed, pasture, livestock buildings, feed storage, manure disposal, livestock machinery, and other investments related to the dairy enterprise.

Lowering investment is difficult. Rationalizing why investment is more than \$6,000 per cow is easy; however, you should address the problem because your dollars are not working hard enough. The usual solutions to high investment per cow include:

- 1)** restraint on future investment
- 2)** increasing cow numbers without further increases in investment
- 3)** trading a farm in a high value area for (perhaps) a larger farm in a lower value area
- 4)** leasing assets instead of purchasing them
- 5)** selling unproductive assets

The number of cows is too low if the facilities are not full. Filling the barns with high-producing cows almost always pays. Most competitive farmers fill their buildings to 110–125 percent.

Sometimes it is possible to increase cow numbers by making “alternate arrangements” for the care and housing of dry cows and replacement heifers. What would it take to increase the number of cows on your farm by 10 percent?

Reference:

Business Summary: New York State, Cornell University, 1995, table 39, page 36, average = \$6,264, top 10 percent = \$5,601.

Measure 6: Capital Efficiency

As measured by:

Asset turnover ratio (ATR)

Competitive level:

More than 0.50

Calculation:

$$\frac{\text{Gross revenues}^*}{\text{average total farm assets}}$$

Example:

$$\frac{\$ 480,000 \text{ gross revenues}}{1,000,000 \text{ average total farm assets}} = 0.48 \text{ ATR}$$

* **Gross revenues = cash sales + inventory changes + receivables changes + government payments + other farm income**

The ATR measures the efficiency by which all farm assets generate revenue. The higher the ATR, the more efficiently assets generate revenue. Gross revenues include revenues from cash sales, inventory changes and receivables changes from crops, livestock products, government program payments, and other farm income. Average total farm assets is the average of the total farm assets at the beginning and at the end of the year.

FINPACK uses a different method of computing ATR than the NYFBS. Both methods are acceptable, but they give different results. The NYFBS uses the gross revenue approach shown in the example above. FINPACK uses the value of farm production method, which results in lower ATRs. FINPACK users who want to compare with this measure should calculate their ATRs manually using the formula provided here.

If the asset turnover ratio is below 0.50:

The first question to answer is: What is out of line? Are the gross revenues too low, average total farm assets too high, or are both causing problems? On specialized dairy farms, the quantity of milk sold and the milk price impact gross revenues most significantly. If milk production per cow is normal, an adequate number of cows are held, cull and other sales are normal, and milk prices are not depressed, then the problem may be with total farm assets. Many competitive farmers use BST on eligible cows, overfill their facilities, and milk more than two times per day to reap the most profit from their investments.

Many dairy farmers commonly tie up more money in their farms than is necessary to run them. For example, grain farmers usually have a lower ATR than dairy farmers. Farmers who own more land than they need to feed their herds frequently have a low ATR. Many dairy farmers would increase their net incomes and their ATRs by reducing the acreage of crops they raise and better managing the dairy enterprise. Another efficiency killer is building a new parlor. Financially it is difficult to justify building a milking parlor unless it is used at least 15 hours per day.

Another factor in low ATR is high-priced land. The value of some dairy farmers' land has increased significantly as a result of urban and other development pressures. Higher land values reduce ATR.

Most people do not like to move their businesses. This reluctance, along with the desire to hold on to the property until the price goes higher, causes some farm businesses to stay on high-value farms when perhaps they should not. If the farm family has adequate income to live on and the land is appreciating enough to justify continued ownership, then a low ATR may be acceptable. However, a business struggling to pay the bills and provide for family living should strongly consider cashing in or trading the farm.

References:

Business Summary: New York State, Cornell University, 1995, table 39, page 36, average = 0.49, top 10 percent = 0.60
Recommendations of the Farm Financial Standards Council: Financial Guidelines for Agricultural Producers, July 1995.

Measure 7: Profitability

As measured by:

Net farm income (NFI)

Competitive level:

**At least \$75,000 per year for
each owner/operator family**

Calculation:

**(Cash receipts
+ inventory change
- expenses
- depreciation)
÷ number of owner/
operator families**

Example:

**\$1,144,000 cash receipts
+ 20,000 inventory change
- 960,000 expenses
- 40,000 depreciation
= \$ 164,000 NFI
÷ 1.7 owner/operator families
= \$ 96,470 NFI per family**

Net farm income is one of the best measures of how a dairy farm is doing. For a business to be competitive, its NFI should—in most years—considerably exceed the amount needed for a good family living. Most competitive operators invest any excess back into the business; however, diversifying into savings and off-farm investments also is a good strategy.

The NFI of the top 10 percent of farms in the New York dairy summary in 1995 was \$185,589 per farm. However, these top farms had an average of 1.68 owner/operators, which leads to a net farm income of \$110,470 per owner/operator (family). Personal withdrawals were approximately \$60,000 per farm or \$35,700 per owner/operator; thus, the surplus NFI for these top farms was approximately \$125,000 per farm or \$74,770 per owner/operator. Farms with that much surplus income have a tremendous advantage in positioning themselves to become even more competitive.

These competitive farmers use most of their surpluses to boost livestock and crop inventories. In 1995 livestock and crop inventories on farms in this group increased by \$95,157. In 1994 those inventories increased by almost \$80,000.¹ In essence, these farmers are rapidly adding cows and feed. The surpluses are an important source of funds.

¹ Although the farms in the top 10 percent group change from one year to the next, many of the same farms remain in the group during consecutive years.

As a group these farms borrow more money each year than they repay. In both 1994 and 1995 the average farm in the top 10 percent group owed approximately \$35,000 more at the end of the year than at the beginning of the year. However, that was not cause for alarm because the value of the assets of the average farm in that group increased more than four times as much as their debt. The assets of the average farm in the top 10 percent group rose by almost \$160,000 in 1994 and by more than \$175,000 in 1995. Accordingly, their farm net worth rose by almost \$125,000 in 1994 and by more than \$140,000 in 1995. The combination of a high income, modest personal withdrawals, and increased debt allows these farms to grow rapidly, without undue increased financial risk. This strategy makes these dairy farms even more competitive.

Calculating NFI requires working with a year's receipts, expenses, inventories, and depreciation. Receipts, expenses, and depreciation can be obtained from the business's tax return. Inventory change requires comparing inventory at the beginning and end of the year. Inventory items include grain, feed, livestock, prepaid expenses, and accounts payable. An item's inventory change equals the item's ending inventory value minus its beginning inventory value. Inventory changes for grain, feed, livestock, and prepaid expenses are added to income while inventory change for accounts payable is subtracted from income. Computer programs, such as FINAN, or paper systems, such as the Agricultural Financial Reporting and Analysis, are helpful for calculating NFI.

If net farm income is below the competitive level:

Having low farm income may be a result of:

- 1)** productivity problems—per cow returns are low.
- 2)** size problems—the farm does not have enough cows.
- 3)** debt problems—the farm has accumulated too much debt relative to its asset base.
- 4)** expenses are too high.

If you are not meeting your income goals, consider these actions:

- 1)** Increase returns per cow. You can accomplish this by reducing costs per cow, especially feed costs, or increasing production per cow.
- 2)** Sell off under-used assets and pay down debt.
- 3)** Expand the number of cows, if you are in the financial and managerial position to do so.
- 4)** Find lower cost ways of running the business.

Obtaining off-farm employment may increase family income, but it does not increase NFI.

References:

Business Summary: New York State, Cornell University, 1995, tables 7, 15, 16, 17, 45 (and 1994 NYFBS comparable tables).

Recommendations of the Farm Financial Standards Council: Financial Guidelines for Agricultural Producers, July 1995.

Measure 8: Profitability

As measured by:

Rate of return on farm assets (ROA)

Competitive level:

Above 11 percent

Calculation:

**(Net farm income from
operations farm
+ interest expense
- owner withdrawals
for unpaid labor and
management)
÷ average total farm assets
x 100**

Example:

**\$ 190,203 NFI
+ 66,980 interest expense
- 45,875 owner withdrawals
= \$ 211,308 return to assets
÷ 1,877,694 average total
farm assets
= 0.1125
x 100
= 11.25% ROA**

Rate of return on farm assets is useful for determining what the assets invested in your operation “earned.” The higher the ROA, the more profitable the farming operation. If you use current market values to determine the worth of your assets, you can use the ROA to compare your earnings to those of other businesses for the same time period. The ROA also represents the opportunity cost of having your assets invested in the dairy business as opposed to investing in another business or other investment opportunity that might generate a higher or lower return.

Factors affecting rate of return on farm assets:

- 1) how assets are valued
- 2) profitability of the farm business
- 3) level of owner withdrawals for unpaid labor and management
- 4) amount of unproductive or marginally productive assets

Below, we discuss these four factors in more detail:

- 1)** You may use either a cost basis or market basis balance sheet to compare the performance of your business from year to year. Most farmers and lenders are already using a market value balance sheet. If you use a market value balance sheet, you should hold the values of your intermediate and long-term assets constant from year to year to eliminate the impact of changing asset values. Using a cost basis measures the performance of your farm unaffected by changing asset values, as well as the return on dollars invested. However, an ROA calculated on a cost basis is difficult to compare with the ROAs of other businesses.

Because farm interest expenses are added to net farm income, rate of return on farm assets is not affected by level of debt or how debt is structured in the farm business. Thus, you can fairly compare actual business performance of both high- and low-debt operations.

- 2)** Return on assets will decline during years of declining profitability. If profitability is always low, then the farm manager must look at ways to increase profitability. Return on assets should be higher than the interest rate on borrowed money. If interest rates are higher, then other parts of the business are subsidizing the interest payments for any new or existing debt. It is not unusual for other parts of the farm operation to subsidize land investments, as land typically has a low rate of return.
- 3)** In our enterprise budgets, we value owner withdrawals for unpaid labor and management at \$7.00/hour for labor, plus 5 percent of the gross dairy income as a management charge. Return on assets may be overstated if owner withdrawals are lower than this, perhaps supplemented by off-farm income. Farms set up as corporations would not subtract a labor and management charge because these are deducted from net farm income as salaries.
- 4)** Finally, if a business has a large investment in unnecessary and/or unproductive assets, ROA may be low. In these situations, the farm manager needs to inventory these assets carefully and determine if the business could be more profitable if the dollars those assets represent were reinvested in other ways.

The New York Farm Business Summary also deducts a charge for other unpaid labor from net farm income in addition to unpaid operator labor. However, unless a dairy operation has large amounts of unpaid labor, this deduction will not significantly affect the resulting ROA calculation.

References:

Recommendations of the Farm Financial Standards Council: Financial Guidelines for Agricultural Producers, July 1995.

Business Summary: New York State, Cornell University, 1995, average ROA = 4.0 percent, top 10 percent = 11.1 percent (without appreciation).

Ohio Farm Business Summary, 1994, average ROA = 6 percent.

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Measure 9: Liquidity

As measured by:

Current ratio

Competitive level:

Between 1.3 and 3.0

Calculation:

$$\frac{\text{Current assets}}{\text{current liabilities}}$$

Example:

$$\begin{aligned} & \frac{\$40,000 \text{ current assets}}{30,000 \text{ current liabilities}} \\ &= 1.33 \text{ current ratio} \end{aligned}$$

Current assets normally are converted to cash during the year (e.g., cash, stocks, bonds, feeder livestock, accounts receivable, and inventories such as feed).

Current liabilities are financial responsibilities that will fall due within one year of the date of the balance sheet (e.g., accounts payable, operating loans, principal portion of scheduled loan payments, and accrued expenses).

A business must be able to pay its current obligations and have a cushion for unexpected cash shortfalls. Cash shortfalls may occur because of disease outbreaks, lower than expected milk production, lower milk prices, or higher input prices. A current ratio above 1.0 indicates that a farm has more current assets than current liabilities. A competitive dairy farm must pay its bills and keep its bank obligations up-to-date.

If current ratio is low:

A persistently low current ratio indicates a major cash flow problem. Remedies for profitable businesses include:

- 1) refinancing existing debt with longer repayment terms
- 2) selling nonessential intermediate or long-term assets (e.g., machinery and investments)

If the business is not profitable, the remedy is to make the business more profitable.

Some commercial lenders extend non-mortgage credit as a current liability, which results in ratios substantially lower than 1.0 for some farmers. This is not problematic as long as the lender continues to extend credit.

Extending non-mortgage credit gives the lender more control over the loan—and the farm. These loans usually are reviewed and renewed at least annually. This large “line of credit” causes some farmers problems when they have bad years and their lenders will not extend additional credit. Other lenders also may consider the farm a high risk because of its poor current ratio. A low current ratio is usually a minor problem when the farm is profitable and the debt-to-asset ratio is well below 40 percent.

If current ratio is high:

High current ratios indicate surplus cash. Current assets usually generate lower returns than other assets. If your current ratio is high, consider investing in assets with higher returns.

References:

Business Summary: New York State, Cornell University, 1995, table 11, page 13, average = 1.64.

Recommendations of the Farm Financial Standards Council: Financial Guidelines for Agricultural Producers, July 1995.

Measure 10: Debt Repayment Schedule

As measured by:

Scheduled annual debt payment as a percent of gross farm receipts

Competitive level:

Less than 20 percent of gross farm receipts

Calculation:

(Total annual scheduled principal
+ total annual scheduled interest payments
+ total scheduled capital lease payments)
 \div **gross farm receipts x 100**

Example:

\$ 83,100 principal
+ 37,700 interest
+ 0 capital lease payments

= \$120,800 total debt payments
 \div **775,000 gross farm income**

= 0.156
x 100

= 15.6% of gross receipts

Almost all businesses manage debt. Scheduled annual debt payments as a percent of gross farm receipts is a good measure of competitiveness. Too much scheduled principal, interest, and capital lease payments seriously affect the ability of a business to meet cash obligations and have enough left to provide desired operator income and to reinvest in the business.

Factors affecting scheduled annual debt payment as a percent of gross farm receipts:

- 1) total farm debt
- 2) how debt is structured (short, intermediate, or long term)
- 3) interest rates
- 4) gross farm receipts

If scheduled annual debt payment as a percent of gross farm receipts is too high:

When scheduled debt payments are too high and cause difficulties in the farm business, a manager must explore options, then act. If the business has significant short-term debt, rescheduling some of that debt over a longer (but realistic) term will decrease annual payments. If currently available interest rates are lower than those you are paying, refinancing is an alternative worth investigating.

Reducing total debt through sale of unused assets, or carefully planning, controlling, and spreading debt over more cows are also options. However, any alternative will only be successful if the business is profitable.

In some cases, when money is borrowed for an expansion, annual debt payments as a percent of gross receipts decreases.

References:

Business Summary: New York State, Cornell University, 1995, tables 17 & 18, pages 18 & 19, average = approximately 15 percent, top 10 percent = approximately 14 percent.

Recommendations of the Farm Financial Standards Council: Financial Guidelines for Agricultural Producers, July 1995.

Measure 11: Solvency

As measured by:

Debt to asset ratio (D/A)

Competitive level:

Less than 40 percent

Calculation:

$$\frac{\text{(Total farm debts)}}{\text{total farm assets}} \times 100$$

Note: Figure is stated as a percent

Example:

$$\frac{\$200,000 \text{ debt}}{500,000 \text{ assets}} = 0.40$$

$$\times 100 = 40\% \text{ D/A}$$

Solvency is a measure of the ability of a business, at a point in time, to meet all debt obligations following sale of all assets. This is measured by the D/A ratio. The debt to asset ratio increases as the business incurs greater levels of debt, and decreases as debt is paid off. A business with little debt has a D/A ratio close to zero.

Debt to asset ratios will vary through the normal life of a business. Higher ratios are common in new and expanding businesses—and often approach financially stressful levels. High D/A ratios are acceptable for limited periods of time when plans and projections indicate that the profitable business will quickly generate funds to pay down debt and bring the ratio below the competitive level.

A low D/A ratio is only one indication of the financial condition of a business. When evaluating the D/A ratio of a business, a good business manager must also look at the liquidity of the business (current ratio), its ability to meet cash obligations, and its profitability. A business may have little debt, but be unprofitable and unable to generate the cash to meet all obligations. If that is the case, the other fourteen measures may help determine why the business is not profitable.

D/A ratio	Financial position of business
< 40 percent	Strong
40–70	Possibly stressed
> 70	Very stressed

References:

Business Summary: New York State, Cornell University, 1995, table 13, page 15, average = 0.39, top 10 percent = 0.47.

Recommendations of the Farm Financial Standards Council: Financial Guidelines for Agricultural Producers, July 1995.

Measure 12: Solvency

As measured by:

Debt per cow

Competitive level:

Less than \$2,000 per cow; less than \$3,000 per cow during an expansion

Calculation:

$$\frac{\text{Total farm debt}}{\text{(lactating cows + dry cows)}}$$

Example:

$$\frac{\$800,000 \text{ debt}}{300 \text{ cows (249 lactating + 51 dry)}} = \$2,667 \text{ debt per cow}$$

Note: Figure is stated as a dollar amount

Another way of looking at the ability of a dairy farm to meet its debt obligations is by looking at total debt per cow. While the debt to asset ratio measures the overall debt position of the business, the debt per cow indicates how a manager would repay the debt. As the profit center of a dairy operation, cows generate the money needed to make principal payments.

If debt per cow is too high:

When a business has debt per cow levels significantly higher than \$2,000, it may experience difficulty meeting all principal and interest payments. Solutions to this problem could include:

- 1) selling any unproductive assets and paying down debt
- 2) increasing number of cows with little additional debt
- 3) increasing net income per cow and paying down debt
- 4) withdrawing less from the farm business for family living and paying down debt

If debt per cow is too low:

If a business has a very low debt per cow and is not highly profitable, the management team should assess the operation to consider if moderate investments could increase efficiency and profitability.

Debt per cow as a planning tool:

A manager can quickly estimate the amount of additional debt possible to take on to finance an expansion and stay around the \$3,000 per cow figure.

Example:

Current situation is 125 cows at \$1,800 debt per cow. The manager plans to expand to 250 cows and keep debt per cow less than \$3,000.

Original 125 cows x (\$3,000 - \$1,800)	=	\$ 150,000
Additional 125 cows x \$3,000	=	\$ 375,000
Total maximum new debt	=	\$ 525,000

Reference:

Business Summary: New York State, Cornell University, 1995, table 13, page 15, average = \$2,381, top 10 percent = \$2,578.

Measure 13: Mission Statement

As measured by:

Written mission statement

Competitive level:

**The management team agrees
on why they are in business.**

Example:

"Our mission is to produce and market high-quality milk in sufficient quantity to provide a good standard of living for our family and our employees. The business should be profitable enough to provide above average compensation for employees and long-term financial security for our families." (See additional sample mission statements in Appendix C.)

Rationale:

The management team must agree about why they are in business. Each member of the team having a different "mission" will inevitably lead to one battle after another and many misunderstandings as each manager works toward his or her own personal mission.

For example, one manager may focus on making a lot of money, another may want time with a spouse and family, while others may strive to have the top herd in the county, district, or state. Having different missions can stifle decision-making on a broad range of issues. These problems often stifle business competitiveness and ultimately may lead to a breakup of the business.

Developing a written mission statement helps a management team focus on what is really important and begin working together toward common goals. A unifying statement, the mission informs everyone where the business is headed and what each person's role in it should be. In times of tension and disagreement, a mission can help everyone focus and work together.

A management team should review the mission statement regularly, adjusting it as necessary to prevent staleness and complacency.

Suggestions for developing a written mission statement:

As a first step, the management team should commit to developing a written mission statement. (If you are still uncertain about what comprises a mission statement, review additional sample mission statements in Appendix C.)

As a second step, the team should decide who should participate in developing the mission statement. Most businesses include the whole management team. A few include everyone involved in the business.

A third (optional) step breaks the process down into smaller, simpler steps. Those involved in developing the mission statement outline key elements prior to writing the whole thing. Questions to answer include:

- Why are we in this business?
- What are we trying to achieve?
- What values are important to us?
- How do we want this business to impact our employees, families, customers, consumers, and the dairy industry?
- How would we like this business to look in 7–10 years?

The final step is to work together to draft a mission statement based on the values of those in the business. This is not an easy process, and it usually does not happen in one meeting or in an hour or two.

Once developed, the mission statement is a powerful tool to direct the business and focus the management activities where they will have the most impact. However, because people and their environment influence businesses, the mission statement should be reviewed and revised every few years, if needed, to reflect the changing goals of the management team and the external and internal environment of the business.

Reference:

1995–96 *Managing for Success Workbook*, Dairy Excel.



Measure 14: Maintain Family's Standard of Living

As measured by:

Standard of living over time

Competitive level:

**Increase herd size by at least
60 percent every 10 years**

Example:

$$\begin{array}{r} 137 \text{ cows in 1996} \\ \div 80 \text{ cows in 1986} \\ \hline = 1.71, \text{ a 71\% increase in cow numbers in 10 years} \end{array}$$

Families usually wish to maintain or increase their standard of living over time. Because of inflation, farm income must increase or standard of living falls. Above average dairy farmers who have improved management, adopted technology, and increased production per cow have only maintained or slightly increased income per dairy cow over time. Thus, the primary way of increasing dairy farm income is to increase the number of cows on the farm.

The importance of expanding herd size:

Based on the experience of the last 40 years, a dairy farm family with better than average management must increase the number of dairy cows on the farm by approximately 60 percent every 10 years to maintain their standard of living. Families should increase herd size more rapidly if increasing their standard of living is a high priority. If current trends continue, a dairy farm family with 100 cows in 1996 will need 160 cows by the year 2006 to enjoy an equivalent standard of living.

Many dairy producers have neither the desire nor the resources to grow 60 percent every 10 years. Even when they have the desire, limited resources make a 60 percent growth rate every 10 years difficult for an average dairy producer to achieve. Producers who will not or cannot achieve a 60 percent growth rate may operate as dairy producers and support a family for many years. However, because of inflation, they should expect a declining standard of living over time.

Other options:

Farm families who have neither the desire nor resources to expand their herds have several alternatives. The family may retire existing debt and/or invest in financial assets, such as stocks, bonds, and mutual funds. Retiring debt will reduce the interest expenses of the farm in the future. Investments in financial assets will provide returns, which can provide money for family living in future years.

Another alternative is to seek off-farm employment. Cash flow projections will indicate whether or not these options will provide enough funds for family living.

Reference:

Increasing Number of Dairy Cows Needed to Support a Farm Family. Department of Agricultural Economics, The Ohio State University, April 1995, E.S.O. 2214.

Measure 15: Motivated Labor Force

As measured by:

Managers' use of personnel management practices that lead to well trained, enthusiastic, empowered family members and employees who share a commitment to the mission and goals of the business.

Sample personnel management methods:

- Assess your personnel needs, supervisory skills, and working conditions.
- Develop job descriptions.
- Match workers with job descriptions.
- Hire employees who fit job descriptions.
- Develop a thorough training program.
- Train and reward employees.
- Improve your communication skills.
- Schedule work effectively.
- Train and coach your employees.
- Evaluate employee performance and provide feedback.

References:

Farm Personnel Management, North Central Regional Extension Publication 329, 1989.

1995–96 Managing for Success Workbook, Dairy Excel.

The Fork in the Road for Dairy Farms

Dairy managers that want to stay in business for more than twenty years have to be competitive. Competitive dairy producers should plan on exceeding most of the 15 measures in five years. Unprofitability, as a result of not meeting these measures, may force a dairy operation out of business. Of course, the strategies you use to increase your competitiveness will depend on your current situation.

Managers Who Already Are Competitive

Managers of most dairy farms are already doing many things right. **However, to remain competitive you will have to continue to improve your management skills, adopt new technology, and grow.**

As you decide the course of your business, you should carefully consider your alternatives. Becoming overly complacent or attempting to implement change too rapidly are two pitfalls to avoid as you make important business decisions.

If you become complacent, the industry will pass you by and you will lose your competitive advantage. If you are winding down the farm and planning to retire, however, this may be an acceptable course.

On the other hand, a taste of success may leave you hungering for more and more—and right away! You must be careful not to move too quickly, stretch yourself too thin, or rashly adopt a new and unproven technology. Unexpected setbacks may cause you to lose everything.

Dairy farming is a dynamic business. If you want to stay competitive over the long haul, you will have to continue to change and grow as a manager. You will need to continue to learn about management and how to apply the five functions of management: 1) planning, 2) organizing, 3) staffing, 4) directing, and 5) controlling. You also will need to become an expert at creative problem-solving, which cuts across all five management functions.

Managers Who Want to Become Competitive

If your dairy farm currently is not as competitive as you would like, we suggest following the six steps outlined in this section. You may be in a position where income is modest, resources are available, you have good management skills and a desire to improve, and you want to continue operating a dairy farm long term. If this is the case, it is time for you to make some changes.

Step 1: Prepare a Written Mission Statement

Before you do anything, you (and your management team) need to prepare a written mission statement for your farm. You must know why you are in business and what you want to accomplish to become competitive. Discuss your mission statement at length and revise it until it clearly states why you run a dairy farm.

Step 2: Prepare a Written List of Long-term Goals

Next, your management team should prepare a preliminary written list of goals that you believe will make your operation more competitive. Include more long-term goals on your list than you can possibly accomplish. Make sure you write the goals down. Unwritten goals are like uncaught fish—just dreams. If you are better at coming up with good ideas than writing them down, ask your spouse, key employee, or member of the family to do the writing.

Step 3: Share Your Goals and Revise Them

Share this preliminary list with members of your family and others involved in the management of the business. Involve everyone. This process will require all involved to listen to each other and compromise. Others will likely suggest different goals. Be open to their suggestions, and expect them to expand and help improve your preliminary list. Encourage others to suggest additional goals or to modify those initially suggested.

Addressing the following questions may help you evaluate your list:

- Does each goal fit with the reason you are in business?
- Is the goal realistic?
- Does the goal take advantage of your strengths and opportunities?
- Does the goal address your weaknesses and any factors threatening your business?

Step 4: Prioritize Your Goals

Select one or two goals from your final list as top priorities. Most small business managers cannot attack more than one or two goals at a time. Pick one that most of the management team agrees to start working on. Consider delegating responsibility for some goals to others on the farm.

Step 5: Identify Short-term Goals

Identify short-term goals to support the top-priority long-term goal you have chosen to work on. A series of short-term goals lays the foundation for long-term success.

For example, assume that the first long-range goal for attention is “to increase net farm income by at least 50 percent.” Here are some short-term goals that might help you achieve such a long-term goal:

- Get your financial statement, tax returns, Dairy Herd Improvement Association (DHIA) records, and other records in order.
- Get record information for other dairy farms similar to yours, compare them with your records, see how you compare, and shore up any weaknesses.
- Share your records with your lender, Extension agent, or other consultants and ask them to help you identify ways to increase your income.
- Ask your Extension agent how to arrange to run the FINLRB computer program, then use it to evaluate the financial impact of your business changes.

You probably can think of other ideas that fit your business better

than these. Involve your management team when brainstorming and selecting short-term goals to help you accomplish each long-term goal.

Step 6: Determine Logistics of Attaining Goals

Decide who, what, when, where, and how for each goal. This is where you may share responsibility with others. Many of us erroneously believe that if we want things done right, we must do them ourselves. However, there is a limit to how much each of us can do. If we have involved our family and management team from the start in determining long-term and supporting short-term goals, they will be anxious to help achieve them.

For example, here is how you might carry out some of the short-term goals we identified in Step 5.

- Ask whoever keeps your financial records to obtain or create copies of your latest financial statements, tax returns, and DHIA records.
- Ask your local Extension agent to obtain a copy of the latest dairy business summary for New York and Ohio.
- Set a time for you and your management team to review your records and compare them with similar records for other farms.
- Make an appointment for one or more members of your management team to visit with your lender, Extension agent, or other consultants to discuss your records and options for increasing your income.
- Contact your Extension agent about running the FINLRB computer program for your farm.

Managers Who Want to Become Competitive, but Cannot

Some farms cannot be competitive because managerial expertise is low, managers do not have the interest or ability to improve, the farm has few financial resources, and the operation is labor intensive. Producers in this situation should make plans to support the family from non-dairy enterprises.

Managers Who Do Not Want to Become Competitive

Some dairy managers have no plans for making the operation competitive and, in fact, can afford to be noncompetitive. Many of these managers are in their fifties and sixties and carry little debt. The dairy operation may provide livable wages given the circumstances. Moreover, the manager does not have children, other relatives, or employees with a desire to take over the operation. Costs of being noncompetitive may be low as long as the manager is satisfied with the income generated by the operation. Managers in this position should plan on setting funds aside for their retirement.

Most other managers cannot afford to remain noncompetitive when means exist for making the operation more competitive. Younger farmers and struggling farmers who do not become more competitive eventually will find themselves in the previous group as “Managers Who Want to Become Competitive, but cannot.”

References

Business Summary: New York State. Stuart Smith, et. al., Department of Agricultural, Resource, and Managerial Economics, Cornell University, 1995.

Farm Personnel Management. North Central Regional Extension Publication 329, 1989.

Increasing Number of Dairy Cows Needed to Support a Farm Family. Department of Agricultural Economics, The Ohio State University, April 1995, E.S.O. 2214.

1995–96 Managing for Success Workbook. Dairy Excel, Ohio State University Extension, Northeast District Extension.

Ohio Dairy Enterprise Budgets, 1996. Ohio State University Extension.

Profitability of Dairy Farms. Dave Galton, Cornell University.

Recommendations of the Farm Financial Standards Council: Financial Guidelines for Agricultural Producers. July 1995.

Appendix A: Feed Cost and Quantity Calculations

Calculating Total Homegrown Feed Cost

To arrive at total feed cost per hundredweight (cwt.) milk, add the cost of purchased feeds fed to the cost of producing homegrown feeds. Costs of producing homegrown feeds include: direct costs, such as seed, fertilizer, crop chemicals, fuel, and labor; and indirect costs, such as interest, depreciation, taxes, insurance, land rent, etc. Use the worksheet on the following page to help calculate total feed costs.

Comparing Your Cost of Producing Feed to Market Price

Divide the total cost of producing each feed fed by the number of tons or bushels produced to arrive at total costs per unit produced. Compare this average cost to the average market price of the same feed. Can you produce the feed as cheaply as you can purchase it?

Estimating Quantities of Homegrown Feeds Fed

Name of Feed	Beginning inventory	+ Produced	+ Purchased	- Sold	- Ending Inventory	= Fed

To calculate quantities of homegrown feeds fed, start with the beginning inventory in bushels or tons, add quantities produced and purchased, subtract quantities sold and ending inventories to arrive at bushels or tons fed. Keep accurate inventories of feeds on hand at the end of each year. Take a few minutes each day during harvest to keep track of bushels and tons harvested. Monitor quantities in storage monthly. Use these methods to calculate quantities fed daily and to calculate total fed for the year.

Dairy Feed Costs per Cwt. Milk Sold

Feed cost category* (Including cows, heifers, and calves)	Corn	Corn silage	Hay	Hay silage	Grazing	Other feeds
A) \$ Value purchased						
Feed crop costs**	—	—	—	—	—	—
B) Seed (pro-rated)***						
C) Fertilizer						
D) Crop chemicals						
E) Drying costs						
F) Fuel and oil						
G) Repairs						
H) Custom hire						
I) Hired labor						
J) Utilities						
K) Interest						
L) Leases, machines, buildings						
M) Land rent						
N) Taxes						
O) Insurance						
P) Depreciation of machines and buildings						
Q) Miscellaneous costs						
R) Total cost each feed (sum of A through Q)						
S) Total feed costs all feeds (sum of totals in R, above)						
T) Average number of cows in herd (milking and dry) for the year						
U) Hundredweights of milk sold						
Total feed costs (all feeds) divided by average number of cows in herd					(S ÷ T)	
Total feed costs (all feeds) divided by cwt. milk sold					(S ÷ U)	

* Include all types of feed fed (purchased and raised), including minerals, additives, and medication. Use extra sheets if necessary.

** Include only the costs of producing feed fed. Do not include costs of feed sold.

*** Pro-rate establishment costs and annual costs of perennial crops over the average life of such crops on your farm.

Appendix B

Table A. Feed requirement for a dairy cow and replacements (21,000 lb. production)**

Item	Unit	For cows and replacements
Corn	bu.	102.00
Soybean oil meal	lb.	1,976.00
Dicalcium phosphate	lb.	157.00
Salt	lb.	87.00
Hay equivalent*	ton	4.22
Corn silage	ton	9.21
Milk replacer	lb.	14.00

* Hay equivalent composed of hay and/or haylage.

** These ingredients along with \$ 0.15 per day for feed additives

Source: *Ohio Dairy Enterprise Budgets, 1996*. Ohio State University Extension, p. 14, footnote 6.

Table B: Feed required each day for a milking cow producing 70 pounds of milk per day*

Item	Daily lb. fed**
Corn	16.00
Soybean oil meal	2.20
Hay silage	39.00
Corn silage	45.00
Dicalcium phosphate	0.19
Magnesium oxide	0.04

* These ingredients along with \$ 0.15 per day for feed additives.

** The number of pounds fed to a cow during a day. Stated on an as fed basis.

Appendix C: Sample Mission Statements

"Our mission is to produce and market the highest quality milk and registered Holsteins for a global market. We also strive to provide a suitable standard of living for our family and employees."

"Our mission is to honor and glorify Jesus Christ in everything we do. We will treat our family, employees, suppliers, and markets in a way that is pleasing to the Lord. We will produce high-quality milk with high-producing Holsteins in well-kept facilities. We will make enough money to support our families and contribute substantially to the Lord's work."

"The mission of our farms is to provide an above average standard of living for both owners and employees through the sales of milk, live-stock, and crops, with an emphasis on breeding a high-quality, registered Holstein herd."

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